

# CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

J. D. DUNSHEE, M.D., Director

## Weekly Bulletin



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GUY P. JONES  
EDITOR

## Domestic Water Supplies

The proper construction of wells and reservoirs in connection with domestic water supplies is a matter of importance in those districts where municipal supplies are not available. In a special bulletin pertaining to rural sanitation issued by the Bureau of Sanitary Engineering of the California State Department of Public Health, the essential provisions for safe domestic water supplies are outlined as follows:

### CASED WELLS

Since the zone between the high and low level of the ground water table is in the region of most intense underground pollution, and since pollution does not appear to diffuse downward in the ground water, it is imperative that water wells be made structurally water-tight from their top above ground surface down to a point a few feet below the lowest ground water table, and preferably into the first one or two strata of clay. In the case of water wells in a neighborhood that also employs sewer wells and deep cesspools, the water wells must be leak-tight to a depth considerably below such sewer wells.

In fact, more burden should be put on the builder of a water well to get sanitary construction than has been the custom. It would relieve much of the anxiety over one's sewage disposal if water wells were of safer sanitary construction.

The main points about sanitary well construction are: choose a location on high ground, not subject to standing water adjacent to the well, and in a clean neighborhood or field, and as far as possible from all sources of dirt and filth. Build

the casing or walls of the well water-tight without perforations to a depth several feet below lowest ground water table, and also below lowest sewer wells in the vicinity, and preferably into clay. Keep perforations as low as possible consistent with a proper supply. Carry the casing intact a foot or so above ground. Keep pump or other drippage and drainage well away from the well. A concrete platform around the well shedding away from the well is important. Choose a pump that produces little drippage and keep it in that condition. Set the pump on a concrete base having good drainage.

The ordinary slip joint and double-riveted cased wells are not secure against entry of polluted ground water. A better type of casing is screwed joint or welded joint wrought iron pipe. This requires use of power equipment for driving the well. Another type of construction is to use both an inner and an outer casing the desired depth, and fill the annular space between with rich cement mortar. The mortar can only be poured into the ring if there is no water in it. If there is water in the annular space the mortar must be made with a small proportion of fine sand and poured in place through a hose down the annular space and gradually raised as the space fills with mortar. As mortar falls through water the cement is washed out of it and its lower layers are left porous and useless.

Gravel-pack or gravel-envelope wells are apt to be dangerous unless the outer casing is intact and leak-proof. Use casing least apt to rust through and weld the seams; or still better, make the outer



casing like the cement ring just described. Carry the casing well above ground.

#### DUG WELLS

Dug wells with porous side walls can be extremely dangerous. If built, they need special isolation from privies and sewage disposal areas, and special concrete construction to keep out dirt and ground water.

Dug wells need better protection at the top. The curb should reach above ground, the whole top cover should be made water-tight and there should be a concrete apron around the well, shedding water a few feet away from it. This is to avoid pollution following down the side of the well. The rope and bucket for getting water out of dug wells is exposed to danger of disease on the hands of users or even to dirt on the ground. The hand pump as used is generally defective in that drippage washes dirt and possible disease back into the well. It is better to use a pump with a tray beneath the spout to lead all drippage and pumpings at least beyond the apron.

#### SPRINGS

Spring water is water that has filtered through the earth until it strikes a formation that sheds its flow laterally to where the spring outcrops. Sometimes springs may be of precarious safety due to the possible pollution through fissures, or to polluting substances on the surface if the ground is boggy, or due to no sanitary protection at the point of outcrop. Springs in creek bottoms are no better than the stream itself, so far as quality is concerned.

The scheme of development of springs depends upon the copiousness of the supply. Springs are sometimes developed by constructing a more or less extensive underground cut-off wall reaching to bedrock, thus forming an underground reservoir which may be tapped through the face of the cut-off wall. A good type of construction is a concrete collecting box and underground tile collector lines across the path of travel of the spring water to intercept it. The box for this purpose should be impervious on all sides, curbed above ground, and roofed over. Concrete is the best construction. The tile lines should be deep enough to afford good filtering action from above, say 5 or 6 feet deep. The tile may be surrounded with a few inches of coarse rock and then a few inches of finer rock on top, and the trench back-filled with clean soil.

Springs should be fenced against stock contamination around the spring, and storm water ditches should shed the water away.

#### SURFACE WATERS

Surface waters are not safe unless the watershed is devoid of all habitation and human use. This is a condition so seldom experienced that it is almost a dictum that surface waters are not safe without purification.

Purification is not yet reduced to such simple steps that the individual householder can safely employ it. In those rare circumstances where a family must depend upon surface waters, it is advised that the bureau or your health officer be consulted for whatever special advice can be given.

#### WATER TANKS

Water tanks in the country often have no covers and hence sunlight in them soon sets up a moss growth, which is unsightly and imparts a bad taste to the water. The remedy is to put a good cover over the tank. The tank outlet should be put above the floor of the tank, and there should be a drain for ease in cleaning.

#### TASTES

When water direct from wells tastes bad or becomes discolored it is apt to be a sign of drawing strongly on some water stratum that is inferior, or more rarely there may be some organic or sewage pollution. Chemical analysis of water in the country is generally a wasted expense, for after it is made there is little that can be done about it except to bore a new well. One may experiment with aeration and with a household filter. Sometimes chilling the water makes it palatable.

Damage by dead animals or decaying matter in a well is best dealt with by removing the cause and pumping out the well until the water becomes palatable. A pound of chloride of lime, or a pint of soluble kitchen clorox or luxol, etc., per 15,000 gallons of water, is a good disinfectant. Use enough to impart a noticeable taste in the water. The taste will disappear in a day or so, or more quickly if the water is pumped out of the tank or well being treated. Often a contamination found by analysis is due only to filth in the well or tank and will disappear when the filth is removed. Rust in water, which appears when the water stands, is not a sign of pollution but of iron in the water. Contamination is seldom, if ever, visible to the eye.

#### INFANT MORTALITY IN AUGUST

There were 6839 live births that occurred in California during August, 1934. During the same month, there were 167 stillbirths and 300 deaths of infants. Among the deaths of infants, 184 were due to malformation and diseases of early infancy; 94 to premature birth; and 18 to injury at birth.

#### HEALTH OFFICERS APPOINTED

Dr. J. M. Wakefield of Sutter Creek has been appointed health officer of Amador County to succeed Dr. G. L. Lynch, who died recently.

Dr. C. C. Purviance has been appointed city health officer of Fairfield, succeeding Dr. H. V. Clymer, deceased.



## DEATHS FROM CEREBRAL HEMORRHAGE AND APOPLEXY

Since 1930 the death rate for cerebral hemorrhage and apoplexy has shown a decrease each year. In 1933 the death rate for this disease was 74.0 per hundred thousand population, which is the lowest rate for this cause that has been recorded in California since 1917. The highest death rate for cerebral hemorrhage and apoplexy was in 1924 when the rate was 102.0 per hundred thousand population. As a rule, the variation in the rates for this disease are not conspicuous. The factors that have caused the maintenance of lower rates during recent years are unknown. Whether the change in methods of living due to changed economic conditions has produced lower death rates for apoplexy is not known. It is reasonable to suppose, however, that the elimination of high pressure living since the big days of prosperity may have something to do with the improved conditions in mortality from this cause.

The following table gives the number of deaths from cerebral hemorrhage and apoplexy together with rates per hundred population for the years 1906 to 1933:

CEREBRAL HEMORRHAGE AND APOPLEXY

Year	Number	Rate per 100,000
1906	1,097	53.9
1907	1,143	53.8
1908	1,112	50.2
1909	1,194	51.8
1910	1,379	57.4
1911	1,588	63.3
1912	1,587	60.6
1913	1,965	72.1
1914	1,956	69.0
1915	1,875	63.8
1916	1,533	50.3
1917	2,181	69.1
1918	2,843	87.1
1919	2,801	83.0
1920	3,285	92.9
1921	3,567	95.0
1922	3,877	97.5
1923	4,124	98.3
1924	4,499	102.0
1925	4,357	94.1
1926	4,050	83.5
1927	4,036	79.6
1928	4,549	86.0
1929	4,411	80.1
1930	4,688	81.8
1931	4,445	76.0
1932	4,456	74.9
1933	4,485	74.0

It is better for a man to maintain himself in good health than to load himself with learning.—Arnold Bennett (1920).

## TRICHINOSIS SEASON BEGINS

With the advent of colder weather, more cases of trichinosis are reported. Most cases of this disease that occur in California are due to the consumption of raw or undercooked pork products. Pork that has been thoroughly cooked is safe for human consumption; the sole danger lies in eating pork products that have not been subjected to sufficiently high temperatures. It is customary among certain foreign-born races to manufacture sausage from home killed animals; such sausage is generally eaten raw and many cases of severe illness and death frequently follow the indiscriminate use of this product. Commercially packed sausage is prepared under government regulation and the methods of curing, if properly followed, make commercially packed sausage a thoroughly safe article of food. There is great danger, however, in eating any pork product the source of which is unknown unless it has been cooked thoroughly. At all events, it is a safe rule never to eat any pork meat that is underdone.

## WHERE THE MONEY GOES

Less than two-thirds of a cent out of each tax dollar goes for public health, or an average of fifty cents per person in the United States. We know from experience that one dollar from official sources, matched by an equal amount for the support of voluntary agencies such as nursing and tuberculosis associations, is a minimum for adequate health protection. Two dollars will buy three hundred cigarettes, a theater ticket, two pounds of candy, a dozen gallons of gasoline—things gone and forgotten in a day or a week. The same amount spent by each member of a community will buy for a whole year a clean and sanitary city, freedom from typhoid fever, scarlet fever and diphtheria, normal motherhood and healthy children.—Dr. C. E. A. Winslow.

Of the 3½ billion dollars spent in one year in the United States for medical care only one dollar in every thirty goes to public health work for the prevention of disease. The other twenty-nine dollars are spent trying to cure it.—*Texas Bulletin*.

The kernel of the scientific outlook is a thing so simple, so obvious, so seemingly trivial, that the mention of it may almost excite derision.

The kernel of the scientific outlook is the refusal to regard our own desires, tastes and interests as affording a key to the understanding of the world.

Stated thus baldly, this may seem no more than a trite truism. But to remember it consistently in matters arousing our passionate partisanship is by no means easy, especially where the available evidence is uncertain and inconclusive.—Bertrand Russell.



## MORBIDITY

Complete Reports for Following Diseases for Week Ending  
November 24, 1934

## Chickenpox

299 cases: Alameda County 2, Alameda 3, Berkeley 1, Hayward 1, Oakland 41, San Leandro 6, Contra Costa County 1, Fresno County 3, Los Angeles County 22, Alhambra 3, Beverly Hills 1, Burbank 5, Glendale 2, Long Beach 6, Los Angeles 36, Pomona 5, Santa Monica 5, Marin County 2, Ross 3, San Anselmo 1, San Rafael 1, Fairfax 2, Monterey County 1, Riverside County 1, Beaumont 1, Sacramento 8, San Diego County 4, Chula Vista 2, National City 1, San Diego 22, San Francisco 50, Stockton 1, San Luis Obispo County 1, Paso Robles 11, Burlingame 5, San Mateo 2, Santa Clara County 1, San Jose 2, Vallejo 6, Stanislaus County 6, Red Bluff 1, Tulare County 1, Lindsay 3, Ventura County 5, Davis 12.

## Diphtheria

45 cases: Alameda County 1, Alameda 1, Kern County 1, Los Angeles County 5, Compton 1, Los Angeles 16, Marin County 1, Orange County 1, Anaheim 2, Placentia 1, Riverside County 1, Riverside 1, San Bernardino County 1, Redlands 1, San Diego County 1, La Mesa 1, San Diego 4, San Francisco 2, San Joaquin County 1, San Jose 1, Santa Cruz County 1.

## German Measles

13 cases: Los Angeles County 2, Long Beach 2, Los Angeles 5, Anaheim 1, Redlands 1, San Diego 1, Santa Clara County 1.

## Influenza

32 cases: Berkeley 1, Kern County 3, Claremont 1, Long Beach 2, Los Angeles 19, Bell 1, Orange County 1, San Francisco 2, South San Francisco 1, Tuolumne County 1.

## Measles

149 cases: Berkeley 1, Oakland 2, Pinole 1, Huntington Park 1, Los Angeles 8, Santa Monica 2, Grass Valley 1, Orange County 6, Riverside 1, Sacramento 1, San Bernardino County 1, Ontario 1, Escondido 1, San Francisco 2, San Joaquin County 34, Stockton 20, Tracy 31, San Luis Obispo 1, Santa Barbara 1, Santa Maria 27, Santa Cruz 3, Modesto 2, Santa Paula 1.

## Mumps

124 cases: Alameda County 6, Berkeley 5, Emeryville 5, Hayward 2, Oakland 12, San Leandro 2, Richmond 1, Crescent City 1, Fresno County 1, Los Angeles County 1, Beverly Hills 2, Burbank 1, Long Beach 3, Los Angeles 1, Pasadena 1, Santa Monica 1, Whittier 1, Madera 1, Marin County 1, San Rafael 2, Orange 1, Sacramento 1, San Bernardino County 2, San Diego County 1, San Diego 1, San Francisco 16, San Joaquin County 3, Lodi 10, Stockton 3, Tracy 3, San Luis Obispo 1, Santa Barbara County 13, Santa Maria 12, Stanislaus County 3, Red Bluff 1, Lindsay 2, Santa Paula 1.

## Pneumonia (Lobar)

35 cases: Oakland 4, Kern County 1, Los Angeles County 2, Inglewood 1, Los Angeles 12, Mendocino County 1, Riverside County 1, Riverside 1, Sacramento 2, San Diego County 1, San Diego 1, San Francisco 5, Lompoc 1, Santa Barbara 1, Shasta County 1.

## Scarlet Fever

215 cases: Alameda County 1, Oakland 5, Butte County 1, Colusa 1, Contra Costa County 1, Richmond 1, Fresno County 4, Fresno 1, Eureka 1, Calexico 1, El Centro 2, Kern County 1, Los Angeles County 17, Alhambra 1, Beverly Hills 2, Burbank 2, Claremont 2, Covina 1, Culver City 2, Inglewood 1, Long Beach 1, Los Angeles 33, Monrovia 1, Pasadena 1, Redondo 2, Santa Monica 1, South Pasadena 2, Lynwood 1, Hawthorne 2, Monterey Park 1, Gardena 1, Marin County 1, Orange County 2, Brea 3, Fullerton 1, Orange 1, Santa Ana 3, Laguna Beach 1, Garden Grove 1, Riverside County 15, Sacramento 9, San Bernardino County 11, Ontario 1, San Diego County 2, Chula Vista 5, San Diego 7, San Francisco 11, San Joaquin County 12, Manteca 2, Stockton 2, Santa Barbara County 3, Lompoc 2, Santa Clara County 1, San Jose 5, Palo Alto 1, Willow Glen 1, Siskiyou County 2, Fairfield 1, Vallejo 2, Modesto 1, Tulare County 2, Dinuba 1, Exeter 1, Lindsay 1, Tulare 1, Tuolumne County 3, Ventura County 1, Woodland 1, Marysville 1.

## Smallpox

2 cases: Riverside County.

## Typhoid Fever

12 cases: Contra Costa County 1, Fresno County 1, Fresno 2, Kern County 1, Bakersfield 1, Mendocino County 2, Nevada County 1, Sacramento County 1, San Benito County 1, San Bernardino County 1.

## Whooping Cough

64 cases: Oakland 1, Contra Costa County 3, Los Angeles County 9, Burbank 2, Culver City 2, Los Angeles 3, Santa Monica 1, Monterey County 2, Orange 1, Sacramento 2, Chula Vista 1, San Diego 4, San Francisco 12, Stockton 3, San Luis

Obispo 7, Redwood City 1, Lompoc 5, Santa Barbara 1, Santa Maria 1, Palo Alto 3.

## Dysentery (Amoebic)

One case: San Francisco.

## Dysentery (Bacillary)

7 cases: Los Angeles County 1, Los Angeles 4, Redondo 1, Sacramento 1.

## Ophthalmia Neonatorum

One case: Los Angeles.

## Pellagra

One case: San Francisco.

## Poliomyelitis

23 cases: Kern County 2, Bakersfield 3, Taft 1, Los Angeles County 1, Los Angeles 9, Mendocino County 1, Sacramento County 1, Sacramento 1, San Diego 1, Lodi 1, Burlingame 1, Red Bluff 1.

## Tetanus

2 cases: Alameda County 1, Oakland 1.

## Trachoma

4 cases: Riverside 3, Fairfield 1.

## Encephalitis (Epidemic)

2 cases: San Diego 1, Watsonville 1.

## Trichinosis

3 cases: San Francisco.

## Food Poisoning

One case: Los Angeles County.

## Undulant Fever

2 cases: San Mateo 1, Tulare County 1.

## Coccidoidal Granuloma

One case: La Mesa.

## Septic Sore Throat (Epidemic)

5 cases: Long Beach 1, San Mateo County 1, South San Francisco 2, Santa Barbara County 1.

## Rabies (Animal)

12 cases: Los Angeles County 5, Huntington Park 1, Los Angeles 2, Manhattan 1, Monterey County 1, San Diego 2.

Abolition of disease—and we can abolish 80 to 90 per cent of all the physical ills we suffer, outside of accident and old age—abolition of disease is the next great task of civilization. To abolish disease means also to abolish our greatest cause of poverty—there is no single cause, apart from feeble-mindedness, so great in producing poverty as disease. It can be done; only a pacifist attitude of mind induced by centuries of submission to disease as something inevitable permits disease to continue. Now that we have broken the shackles of traditional ignorance, now that we see clearly that we can be free and how to gain our freedom, it is inconceivable that we shall for many years longer bow beneath this needless and, because needless, quite intolerable burden.—H. W. Hill, M.D.

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